Career Choices in the Petroleum Industry

Nova Scotia Department of Natural Resources
Mineral Resources Branch
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Introduction

You will soon be making one of the most important decisions of your life. How often have you been asked "What are you going be?" Now is the time to start thinking about the courses you must choose in high school to prepare you for the types of jobs that are available today.

In Canada, most of the jobs in the petroleum industry are based in Alberta, but British Columbia, Saskatchewan and, more recently, Nova Scotia and Newfoundland have become centres of industry activity. Offshore and onshore oil and natural gas industry jobs are fairly specialized. Some jobs have very interesting names. For example, there is a tool push (rig manager), a jug hustler (a helper on a **seismic crew**) and a **roughneck** (rig crew member).

Therefore the petroleum and related industries need a wide range of skills and trades. Some require university and technological education while others provide training "on the job".

Exploration for oil and natural gas and the production of oil and natural gas from wells usually involves many specialist firms with a wide range of expertise. Such companies are hired by the petroleum company that is conducting the exploration or producing the wells. To drill an oil or natural gas well onshore takes about 90 people while a similar operation offshore could involve 200 people.

Examples of types of companies involved in the petroleum industry follow. The companies given as examples are or have been involved in the Cohasset Project, currently ongoing offshore Nova Scotia;

- oil and natural gas companies (LASMO Nova Scotia Ltd.)
- transportation companies (Nordic American Shipping, which owns the shuttle tanker that delivers oil to market)
- oilfield construction companies (M & M Manufacturing Ltd. which built **platform decks** for Cohasset Project in Dartmouth)
- oil field service companies (Schlumberger of Canada which provides wireline logging to Cohasset Project production wells)
- pipeline contractors involved in construction and fabrication (Coflexip & Services Inc. which fabricated and laid flow lines for Cohasset Project)
- drilling rig contractors (Rowan Companies Inc. which owns the drilling rig for the Cohasset Project)
- services involved in the support of an exploration, development or production operation (Couglar Helicopters supply helicopter support while Secunda Marine provides supply boat and standby vessel support to the Cohasset Project)
- government departments (Department of Natural Resources), and
- regulatory boards (Canada-Nova Scotia Offshore Petroleum Board)

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Others

- consulting companies - geophysical, geological and engineering services
- data processing companies
- pipeline companies with expertise in maintenance and repair
- financial and investment companies
- real estate companies

As you can see, it takes many different companies to explore for, develop, and operate an oil or natural gas field. The issuance of exploration rights, approval of Development Plans and the regulation of various exploration and production activities involve various government departments and regulatory boards. There is also the refining and marketing of the products and **by-products.**

Jobs in the industry fall within three major categories and the major jobs are listed in the table below. The list will give you an appreciation of the wide range of opportunities in the petroleum industry.

(1) Administration (office)	(2) Technical (office)	(3) Field Operations

• accountants • purchasing agents • personnel • public affairs • speech writers • systems and computer services • photographers • in-house training/support specialists • economists • financial investors • graphic artists • employee relations • investment analysts • payroll clerks • mailroom/courier service • translators • marketing representatives • secretaries • receptionists • tax specialists • lawyers, and • advertising and promotional personnel	• computer programmers • aviation mechanics and pilots • electrical, mechanical and structural engineers • drilling, production and reservoir engineers • geologists • geophysicists • petroleum technologists: geological, geophysical, chemical, and engineering • electrical, mechanical and instrument technicians • architects • chemists • technical sales representatives • audio-visual production specialists • refinery workers • equipment service representatives • loss control specialists • safety and environmental coordinators • maintenance specialists • various construction supervisors and personnel (required during development phase only)	• drilling rig crews (some positions include: toolpushers, drillers, assistant drillers, roughnecks, crane operators, kitchen staff, rig maintenance crew, roustabout, and radio operators) • service rig crews • supply vessel and tanker crews (if operations are in offshore) • drilling engineers • oil scouts • machine shop operators • electricians • heavy equipment operators • truck drivers • bulk station sales agents • welders • cooks • mechanical engineers • seismic crews • field plant operators • biologists • first aid attendants • boiler operators • environmental consultants • inspectors • service station attendants

The following will give you some general information on each category, highlighting various positions within that particular group. It also gives some idea about the personal and educational requirements for each category.

(1) Administrative Work (Office)

A career choice in administration in the petroleum industry is one area that does not often come to mind. The choices of working on a drilling rig or in a refinery are much more obvious.

People with business, technical and professional skills are required for finance, taxation and general administrative work. Some positions require specialized training. Experience in a

legal or accounting office, business administration, secretarial, or clerical training will serve as an excellent start for a career in administration in the petroleum industry. Once a person is working and gaining experience in the industry, many opportunities will appear for specialization and further training.

Some administrative jobs require "on the job training" although a general understanding of the petroleum industry is an asset. Others require specialized training through post-secondary education at university and specialized schools and colleges. Those wishing to obtain jobs in administration should, depending on their position, have good interpersonal skills, enjoy travelling, and posses a good working knowledge of the petroleum industry.

(2) Technical (Office)

The petroleum industry requires people with technical skills in many specialized areas. Usually post-secondary training at a university, college or technical institute is essential and "on the job" training will be provided by the employer.

The industry requires highly trained people such as engineers, geologists, geophysicists and chemists to undertake technical work with respect to the petroleum industry.

Other people act as assistants to the professionals (petroleum technologists) who use technical equipment and instruments to do experiments and tests. For many professional positions, a university degree in that specific discipline or further education is usually a requirement.

To become a technologists, you need to obtain a high school diploma and then complete a course related to the petroleum industry at a technical institute.

High school subjects useful for a technical career in the industry include sciences, mathematics and computer science. The ability to work with precision, accuracy and patience is also a requirement. Communication and leadership skills are also important for these positions within the technical group.

(3) Field Operations (Outdoors)

Field operations in an outdoor environment include all areas of exploration, development and production, and refining activities. The oil and gas companies sometimes sub-contract parts of the work to specialists firms.

Field operations involve a large variety of individuals. The following examples will give you an idea of this group as well as the qualifications required to work in various field operations. Only a few examples will be presented due to the variety and number of field operations jobs required in this category.

Landcrews (part of an exploration team that includes **landmen,** geologists and geophysicists are responsible for the business negotiations involved in acquiring rights to explore or produce oil and natural gas. Successful candidates for the landcrew positions must have good inter-personal communication skills.

Seismic crews record information to evaluate petroleum potential on land and in offshore areas. Seismic training for survey crews is often "on the job", where inexperienced personnel can be trained in the operation of equipment. Personnel involved in field evaluation of **seismic data** must have background in mathematics, physics and computer science and have

post-secondary training in the area.

Also involved in field work are drilling rig crews. They are responsible for drilling an oil or natural gas well after geologists and geophysicists have determined where it should be located. Once the oil or gas has been discovered, it must be produced and refined. This may involve construction and operation of field facilities, pipelines and refineries and specialists in the construction and operation of these facilities are then required. For example, a refinery requires a well trained workforce including chemists, engineers and technologists, and skilled tradesmen such as pipefitters. Once refined, petroleum products are distributed through bulk distribution stations which require field personnel to operate them.

A number of people with little or no experience are hired as **roustabouts** on the drilling crew. As they acquire new skills, they may progress to other jobs. To work on the rig requires that you are in good physical condition and above average in strength, agility and co-ordination. You have to work as part of a team and should like working with machines and tools.

The bulk distribution station personnel need sales ability, management and business skills. Excellent driving ability is a requirement for those involved in the transportation of petroleum products.

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Employment Opportunities in the Future

The following factors affect the many employment possibilities in the petroleum industry. Activities in various parts of the world and the subsequent demand for jobs is determined by when and where these factors occur. Some of these are:

- the demand for oil and natural gas products
- areas of activity within the industry
- price per barrel on the world market
- technological changes within the industry

The offshore development of the Cohasset and Panuke oil fields, which is Canada's first, has created many job opportunities in Nova Scotia. This activity could lead to the future discovery and development of other oil and natural gas reserves offshore and will therefore provide future job opportunities. Also, with the Hibernia production project proceeding off Newfoundland, employment opportunities are available during the development phase and will continue to be generated during the 20-year production phase. Although no commercial discoveries have been made onshore Nova Scotia, the existing **database** for petroleum and **coalbed methane** will provide an incentive to any interested explorer. This may lead to a future onshore petroleum industry with its related benefits.

People who choose careers in the petroleum industry must be willing to move because of the factors mentioned above and the typical cyclic nature of the industry. Experience gained on one project in a certain county provides a good basis for getting a job in other parts of the world. For example a person could gain experience in Calgary, relocate to Halifax and them make a career move to the North Sea.

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Summary

The oil and natural gas industry has, and will continue to offer exciting employment opportunities for those who are willing to take specialized training and be a part of the dynamic team in the petroleum industry.

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Glossary

By-Products
Secondary components extracted through the refining of raw petroleum materials.

Coalbed Methane
Methane gas associated with coal seams. Often regarded as a dangerous byproduct when encountered during coal mining operations.

Database
Body of information comprising facts, figures, statistics, etc.

Geophysicist
A specialist working to acquire, manipulate and interpret the information resulting from geophysical surveys such as seismic, magnetic, or radioactivity surveys used to evaluate the rock formations in the earth.

Landmen
Persons in the petroleum industry who negotiate with land owners regarding exploration and production activities.

Loss Control Specialist
A specialist or group of specialists assembled by an oil company who review and prepare safety plans on any aspect of the petroleum industry where a loss of control could lead to loss of life, endangerment to the environment or damage to equipment.

Platforms Decks
The different levels or floors that make up a platform.

Oil Scout
A representative of an oil company who gathers information on all the new oil and natural gas wells and other industry developments.

Roughneck
A worker on a drilling rig whose primary work is on the rig floor area. Usually 3 on each crew.

Roustabout
A worker on an offshore drilling rig who loads and unloads supplies and equipment that are sent to the rig from shore base.

Seismic Crew
A team which conducts **seismic surveys.**

Seismic Data
Detai'ed information obtained from earth vibration produced naturally or artificially.

Seismic Survey
A survey to investigate the underground rocks by recording and analyzing artificially produced sound waves reflected from rocks within the earth.

Technologists
Persons trained and skilled in the applied sciences.

Toolpush (Tool Pusher)
An employee of the drilling contractor who is in charge of the entire drilling crew and the drilling rig.

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For More Information

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